



# *the* **ILLINOIS ENGINEER**



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Shown is one of the many steel plants in the Chicago-Gary area served by the Great Lakes Waterways.  
This scene is Calumet River Harbor entrance. (See story on Page 9.)

THE ILLINOIS ENGINEER  
MARCH, 1960  
VOLUME XXXVI, NO. 3



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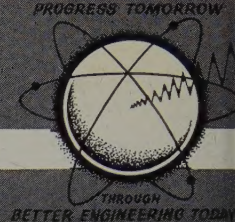




# THE ILLINOIS ENGINEER

ILLINOIS SOCIETY OF PROFESSIONAL ENGINEERS, Incorporated

Affiliated with the National Society of Professional Engineers



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"He Always Leaves A Nice Clean Desk"

## A VETO FOR ENGINEER'S WEEK

By accident, President Eisenhower chose National Engineer's Week, the observance of which terminates today, for his veto of the water pollution bill. The President was doubtless unaware, as were most of us, that such a thing as National Engineer's Week had been proclaimed. There are so many weeks and days that are now pin-pointed for special observances that it is hard to keep track of all.

The veto of the water pollution bill had been expected, but it was nevertheless shortsighted in view of the great need. The veto does not stop federal spending for assistance to localities in clearing the health hazard caused by polluted waters, streams poisoned by sewage or industrial refuse. It merely prevents expansion of that aid, as well as confirmation that it will go on for ten years.

At present annual federal aid for this purpose totals 50 millions. The vetoed Blatnik bill would have appropriated 90 millions annually for 10 years. The challenge to abate water pollution is so colossal that it requires an oversized remedy.

Overriding the veto was all along considered improbable, though the Senate passed the Blatnik bill by sufficient majority to override, and the House by a

majority short of 11 votes of two-thirds. So the pollution will continue to constitute a major national problem. It is easy to say that it should never have been allowed to start. It is our heritage from early days, like reckless soil exploitation. It simply grew. A few ounces of prevention would have been worth tons of cure.

The basis of the President's veto was that he thinks federal aid will discourage local initiative. That is refuted by the fact that the availability of federal aid has always spurred localities to do their part in co-operative projects.

The engineering under government auspices to which attention is called during National Engineer's Week is only a small fraction of the vast engineering projects which will be realized in the 1960's. Even a small list of the scientific and engineering feats of the 1950's is overwhelming. It would seem that science and engineering have gone farther in those ten years than in many previous generations.

To make possible the progress of science and engineering we must develop the talent in our own educational institutions, public and private. Much scientific aid has accrued to us from overseas since World War II. We must hasten producing talent at home, because the overseas talent is staying there.

—Reprinted from the Freeport, Ill. Journal-State.

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## TO THE EDITOR REGISTERED ENGINEER

Editor, Beacon-News:  
February 27, 1960

Our attention has been called to a letter signed by Dick Maier, 467 Seminary Ave., which was published in your paper on Feb. 16. This letter stated, "None of our commissioners, Mayor or City engineer are qualified for the jobs they hold."

This is to advise that the City Engineer of Aurora, namely H. B. Green, is a Registered Professional Engineer, licensed by the State of Illinois and he has more than 20 years experience as a practicing engineer. In addition, he is an active member in the DuKane Chapter of the Illinois Society of Professional Engineers and a member of the National Society of Professional Engineers.

The above statement pertaining to the City Engineer is in our opinion a gross error and is a reflection on the character of Mr. Green and to the profession which he practices. We therefore, request that this letter be published so that the public will be correctly informed as to the qualification of their City Engineer.

DUKANE CHAPTER  
ILLINOIS SOCIETY OF  
PROFESSIONAL ENGINEERS  
BEN R. HOUDEN, P.E.  
President

—Reprinted from Aurora Beacon-News.

Please Note—This action by the DuKane Chapter is just an example of something the Society can do for its members.

## PROFESSOR AND MRS. BABBITT INJURED IN AUTO ACCIDENT NEAR AMES, IOWA

On Wednesday, March 2nd, Professor and Mrs. Babbitt were returning home to Ames, Iowa, when a truck forced them off the highway at a bridge over the Skunk River, four miles south of Mount Pleasant, Iowa. Mrs. Babbitt suffered a broken nose, fractured ribs, and other injuries, and Professor Babbitt was bruised and injured primarily in his arms. They were three days in the hospital at Mount Pleasant, Iowa, and have now returned to their home at 1627 Crestwood Circle, Ames, Iowa. Professor Babbitt stated that he was sure that the padded dashboard on their Buick and the fact that they were both using safety belts probably reduced their injuries and may have saved their lives.

True to his teaching profession, Professor Babbitt poses the following problem: "We were traveling at 60 miles per hour and stopped in 20 feet, what were the 'G's'?"

About June 1st, Professor and Mrs. Babbitt plan to leave for Korea where he is on 18 months assignment.

## "WISHBONE OR BACKBONE"

(Adapted from a speech presented at the ISPE  
Chapter Officers' Conference at Peoria  
January 30, 1960)

JOHN E. HOUSIAUX, *Secretary, ISPE*

### THE PURPOSE AND THE PROBLEM

The purpose of this discussion is to inform Chapter Officers of the organizational, action and operational concepts of the society in order to assist them in the performance of their duties.

Engineers are interested in and wish to build a stronger professional structure. For example, we wish

1. There were student chapters in Illinois.
2. To revise the P.E. Act.
3. We were stronger in matters of ethics, etc.

To find a problem area is not difficult. To find a solution for it will require a great deal more than wishing. If individual chapters, for the next year, are to work effectively, then we should become familiar with the ground rules of the game. We should know how our professional society is constructed and how it functions. The January 1960 issue of THE AMERICAN ENGINEER, in discussing the Functional Plan, gives a very concise review of the background of this society. Your Chapter Constitution and Bylaws and Roberts Rules of Order give a detailed description of the normal duties to be performed by each officer. If effective action is to be the mark of your Chapter year, then it is somewhat imperative that each chapter officer read these references and become thoroughly familiar with the material that they contain.

### ORGANIZATIONAL CONCEPT

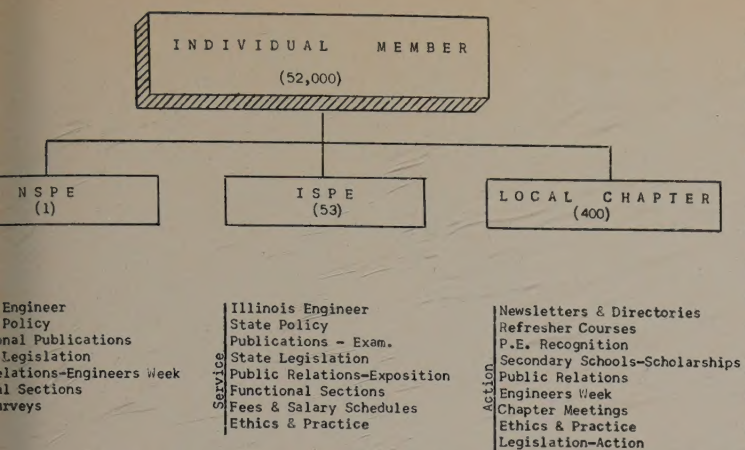
The Organizational Concept (Figure 1) is drawn from the perspective of the individual member. He is entitled to and I believe expects action, results and progress. The diagram illustrates the function of the various organizational elements. NSPE is, insofar as the individual member is concerned, a service component responsible for the development of programs from the "grass roots" ideas. It provides the tools for State and Chapter Activity. ISPE is also a service component, responsible for the stimulation and coordination of Chapter activities and programs. Your Chapter is the action component. The Chapter's work should include the entire spectrum of professional activity with a view toward increasing membership interest and building professional stature for the individual. This structure, which supports the individual member, can be likened to a three-legged stool. If any one leg is weak or shortened through inactivity, then we are out of balance and do not sit straight. We are apt to appear awkward.

### THE CHALLENGE

The entire society then is oriented toward the individual member. It receives its strength from the



## ORGANIZATION CONCEPT



I.S.P.E. CHAPTER OFFICER'S CONFERENCE, PEORIA, JANUARY 30, 1960

Fig. 1

individual—"grass roots" principle. A basic premise of NSPE is that as an individual increases in professional stature, so will the stature of the entire engineering profession be correspondingly elevated. If we want a stronger society, we have available two means of increasing our strength:

1. Increase in numerical strength through new members.
2. Increase the effectiveness of the professional bearing of the individuals who are already members.

These two challenges are for the Chapter as the action component of the society.

## ACTION CONCEPT

The action concept is illustrated in Figure 2. At the base of all action or activity is the individual member. The greatest value of membership is the opportunity to participate in the work of the society. Every member by mere association makes a minimum contribution by adding to the numerical strength and providing financial support to the society. Beyond this, however, is the additional contribution which the individual can make in terms of his own ideas, time and energy. The first link in the action chain is the Local Chapter. If the Local Chapter is weak or inactive, then the whole system becomes short-circuited and the individual is deprived of the greatest value of his membership—the opportunity to participate in the work of the society. The entire structure is correspondingly weakened.

There is a continuous upflow of activity through the three-level structure. This activity produces the programs, policies and actions which, in turn, accrue to the benefit of the individual and the society. Figure 2 then illustrates the method by which effective actions are generated.

## OPERATIONAL CONCEPT

The operational concept depicted in Figure 3 is not yet a reality and has been drawn to illustrate a more ideal condition. This concept envisions the successful change of all Chapter Annual Meeting Dates to a time shortly before the ISPE Annual Meeting. With the annual meetings of the three levels arranged in this sequence, it is possible to have a more efficient transfer of actions and ideas from one level to another. Organizational and planning effort and indoctrination conferences are better arranged to provide for a more uniform flow of information. This operational sequence provides for a full nine or ten months of concentrated, simultaneous activity at all levels, uninterrupted by the split-year problems and the accompanying organizational lags.

The implementation of this operational concept will be one of the problems facing Chapters during this year. Constructive action, through the revision of your Chapter Constitution, patterned from the model now being developed, will lead to greater effectiveness and increased actions at all three levels.

(Continued on Page 15)

## ACTION CONCEPT

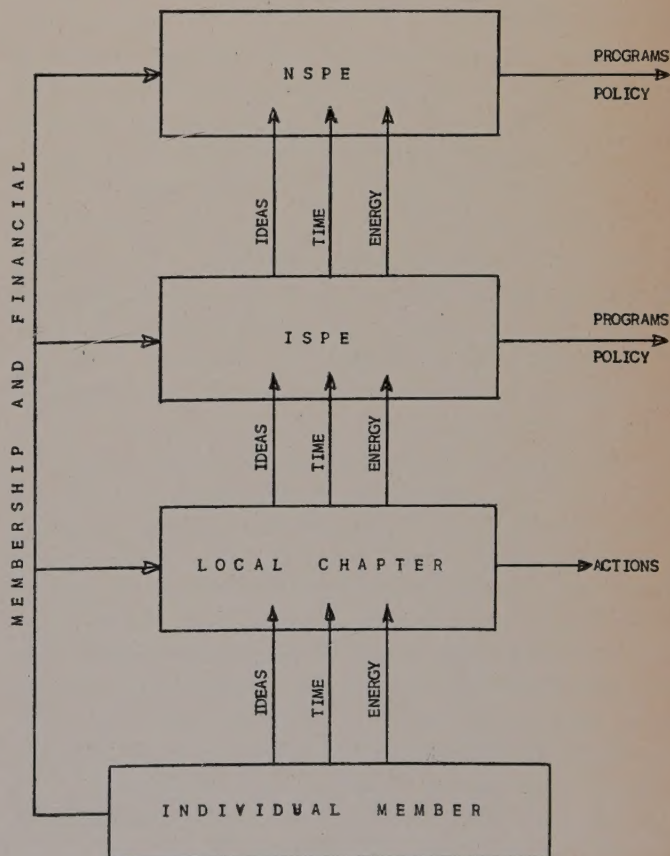


Fig. 2



## DIAMOND JUBILEE CONVENTION- EXPOSITION GOES INTO ORBIT

The Illinois Society of Professional Engineers Diamond Jubilee Celebration in Springfield, May 4-8, really got off the ground last week when it was learned the SPACE CAPSULE will be exhibited by McDonnell Aircraft Corporation of St. Louis. The capsule is a vehicle that the National Aeronautics and Space Agency will use in PROJECT MERCURY in an effort to place the first man into outer space. It is the first time that the full scale model of the capsule will be exhibited to the general public in Illinois.

Along with the announcement of the space capsule display at the State Armory, it was also learned the 75th Annual Dinner speaker on Friday, May 6, would be General John B. Medaris, who commanded Redstone Arsenal in Huntsville, Alabama, during the development of the U.S. Army Missile Jupiter which was the first rocket to place a U. S. Satellite into space.

General Medaris was closely associated with the team of rocket and missile scientists headed by the German rocket expert Wernher Von Braun. The inclusion of General Medaris on the Convention program will be of great interest to engineers throughout the state as well as the public in general, as Medaris has been in the forefront of congressional investigations related to the question of the U. S. Missile and space "gap" with Russia.

The exposition will be a well balanced show with all fields of engineering represented, depicting progress in the industries of petroleum, automotive, aircraft, highways, sanitation and sewerage, railroads, communication, nuclear fields, and the Armed Forces.

The Department of Defense authorized the Military Services in Illinois to furnish exhibits. The Military Engineer was the forerunner of the modern day Civil Engineer and because of the relationship to Military Engineering ISPE is hopeful the Corps of Engineers will have an exhibit portraying the history of the Military Engineer.

Firms who have reserved space in the Armory to date are: Illinois Concrete Pipe Association, Illinois Bell Telephone Co., International Business Machines Corp., Sangamo Electric Company, Illinois Division of Highways, American Bridge Division-U.S. Steel, General Electric Co., Material Service-Div. General Dynamics, Dickey Clay Co., Portland Cement Association, American Vitrified Products Company, Railroad Concrete Products Company, Keuffel & Esser Company, Pozzolan Products Company, University of Illinois, McDonnell Aircraft Co., Westinghouse Electric Co., General Motors (Bates Chevrolet), Burlington Railroad, Department of Defense, Mississippi Valley Structural Steel Co., and Yeoman Brothers Co.



Capital Chapter's Convention Committee in charge of the Ladies' Program are shown at a recent meeting, held to complete plans for the Convention:

Front row, left to right: Marge Kessell, Veronne Crawford, Julie Thunman, Jean Finley, Rose Rice. Back row left to right: Margaret Hathaway, Betty Ritchie, Althea Merchant, Lillian Powell and Thelma Sibley.

## N.S.P.E. FUNCTIONAL SECTION ACTION

An example of the operation of functional sections on the national level took place at the recent winter meeting of NSPE which was held at Wichita, Kansas, February 18, 19 and 20.

The Functional Section for Consulting Engineers in Private Practice reported on its study of fees for federal engineering contracts. As a result of a survey of 118 firms, fee data was obtained on 1,464 engineering service contracts with 17 different agencies and bureaus. The survey and report was prompted by recent statements by the Comptroller General relative to engineering costs on the Interstate Highway Program.

The Comptroller General stated that public agencies can design interstate highways more economically than private engineers. His actual statement was: "If all required engineering services were performed by the respective State Highway Departments, there would be no element of profit in highway engineering costs and by regulation state highway department overhead is not a highway cost eligible for federal participation."

The Functional Section for Consulting Engineers in Private Practice pointed out that the evaluation of costs for highway design should relate the cost to the public whether dispersed through Federal Government or a State agency. Proper basis for evaluation is that which is most beneficial to the taxpayer.

The report of the Functional Section for Consulting Engineers in Private Practice was directed to the Functional Section for Engineers in Government Practice and the latter was requested to make a study and a report. As a result of this study by the Functional Section for Engineers in Government Practice there was published on January 28 a joint statement by both





Shown at the University Club in Urbana are left to right: Chilean Professor Roberto Munoz, Professor M. B. McPherson, L. S. Ryburn, Professor J. C. Guillou, Dr. V. T. Chow.

functional sections. This report entitled "Engineering Services for Government Projects" reads as follows:

"NSPE advocates and supports the practice of high quality engineering services in both government and private practice, and maintains that engineering services should be under the direction of registered professional engineers. Professional engineers in government employment should perform the highest quality engineering services for preliminary study, pre-planning and budgeting, and essential supervisory management and control of governmentally-funded activities. Governmental agencies should contract for engineering services with highly qualified private engineering consultants to the extent consistent with national security, proper continuity programs and the public interest. NSPE further reaffirms its traditionally stated position that engineers in government and private practice recognize a need for engineering activities of a complimentary nature."

This example is given neither to show that government officials have been misquoted nor to point out that engineers in private practice have been improperly evaluated. It is only an illustration how two functional sections have dealt with a problem vital to all engineers and to the entire public.

Paul H. Robbins, Executive Director of NSPE,

writing on "The Engineering Team" (Aug. '56 **American Engineer** concludes: "The mere establishment of the mechanism for more effective service to the members of the Society is not sufficient. NSPE believes that it is important that the functional sections aggressively grasp the opportunities presented toward expediting and encouraging the solution to the many professional problems facing engineers."

### ROBERTO MUNOZ

During the week of Feb. 22, the ISPE was host to Roberto Munoz, an Engineer from Chile. Mr. Munoz is Chief of Hydraulics Laboratory at the University of Chile in Santiago. He was on an exchange visit to the U. S. to study hydraulic projects in this country.

While in Springfield the Chilean Professor visited the University of Illinois' Hydraulic Laboratory, the Illinois Waterways Office, the Springfield Municipal Power Plant and Lake and the consulting office of Crawford, Murphy and Tilly. Professor Munoz was interested in the organization and operation of ISPE and observed the office procedure of the Society as a guide in his future ambition to assist in a National Engineer's Organization in Chile.

In discussing Pan-American relationship with the U.S. government as it affects the industrial and economic development of his country, Professor Munoz expressed the opinion that our country could do more for his country by providing greater technical assistance



than in outright gifts or monetary aid. He was fearful his country's leaders were inclined to agree to U.S. terms to avoid offending us because we had been so liberal in giving direct aid. He felt that a form of "loan" would be better and would allow his countrymen greater "freedom" in resolving their internal problems without looking to the U.S. for "fatherly guidance."

### N.S.P.E. BOARD OF DIRECTORS MEETING, WICHITA, FEBRUARY 18-20, 1960

The Report of the Student Chapters Committee was probably the most controversial item on the Agenda at the Winter Board Meeting at Wichita, Kansas on February 18-20.

A very lengthy report was submitted by the Student Chapter Committee, chairmaned by J. Neils Thompson, Director from Texas. The Committee found a method of establishing Student Chapters in all types of colleges by setting up three categories of student chapters:

**Alpha Student Chapter** Shall be in a college of engineering having a curriculum or curricula of at least four years duration accredited by the Engineers' Council for Professional Development.

**Beta Student Chapter** Shall be in a school or college of engineering having a curriculum or

curricula of at least four years duration leading to an engineering degree.

**Delta Student Chapter** Shall be in a school, college or junior college having a curriculum or curricula of at least two years duration designated as being preparatory for engineering courses in a school or college granting an engineering degree.

It further set up a minimum number of student members in the chapters as follows:

Engineering Enrollment	No. of Student Members
Under 400	20
400-800	30
Over 800	40

The term "Engineering Student Member" was set up and defined as follows:

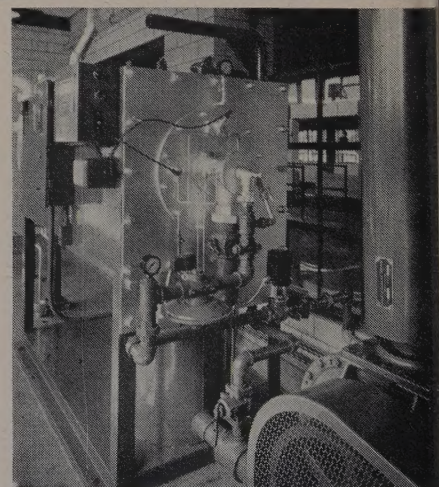
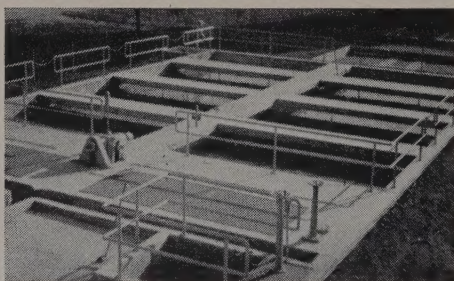
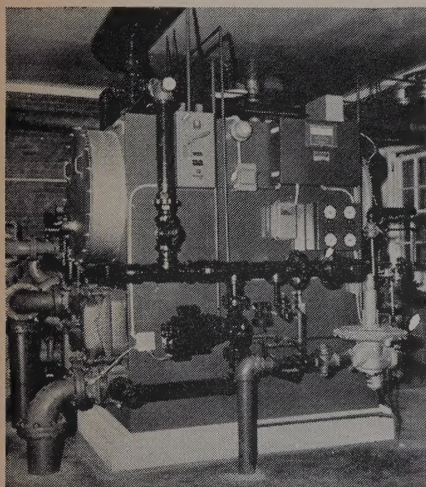
- Any engineering student who is a member of a student chapter which is chartered by a member state society and which is affiliated with the "Program for NSPE Student Chapters."
- Any engineering student enrolled in a curriculum leading to a degree in engineering in a college of engineering which has at least one curriculum accredited by the Engineers' Council for Professional Development.

(Continued on Page 16)

# WALKER PROCESS

engineers and manufacturers  
of equipment for . . .

# water, waste and sewage treatment



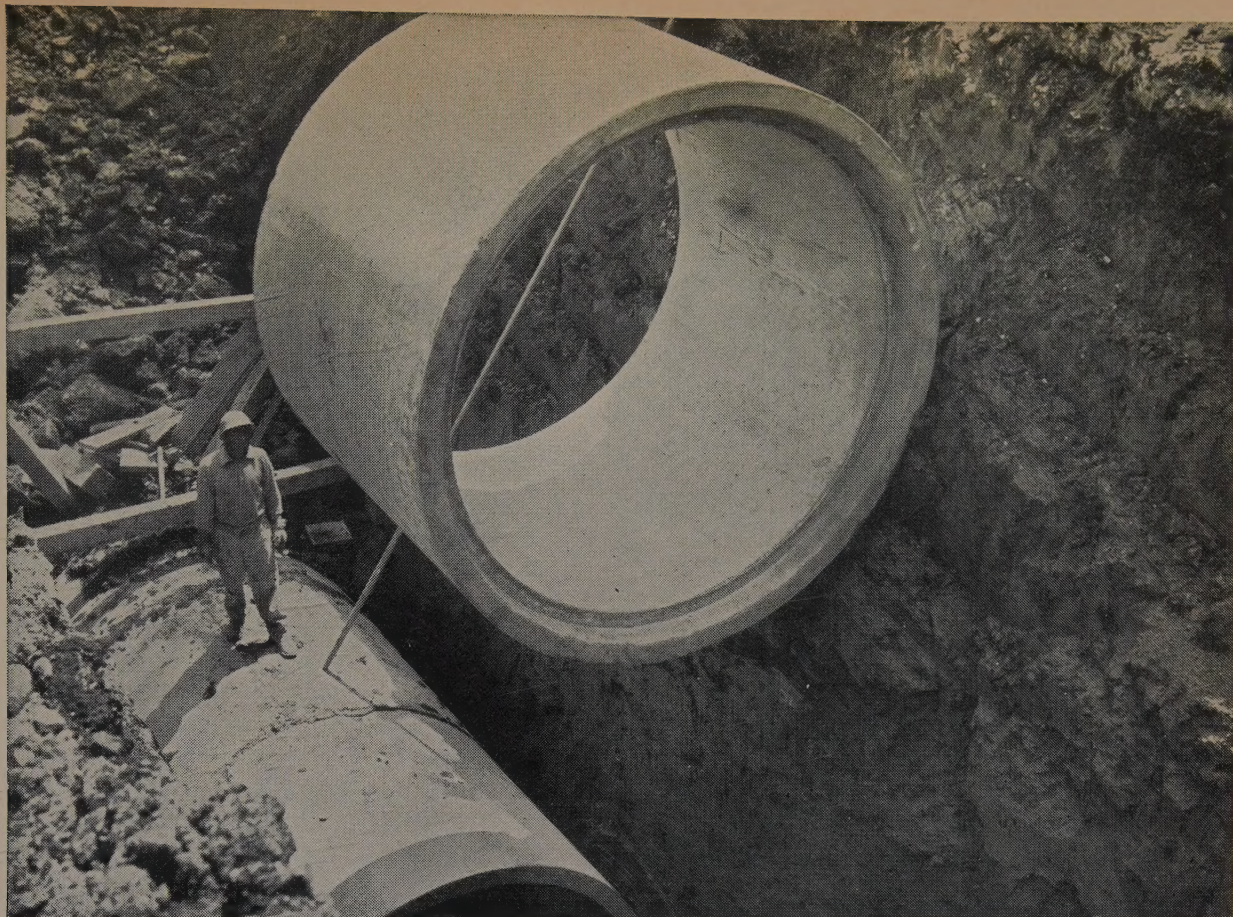
Some of the Walker Process installations in Illinois:  
Left—HEATX, digester sludge heater at Urbana-Champaign; Wilson & Anderson, Consulting Engrs.  
Top—Rectangular Collectors at Morris; Baxter & Woodman, Consulting Engrs.  
Right—CARBALL, CO<sub>2</sub> producer at Moline; Greeley & Hanson, Consulting Engrs.

Walker Process offers laboratory, engineering and manufacturing facilities to assist the consulting engineer and his clients in all problems regarding process equipment for the

handling and treatment of solids-in-liquids combinations. Write for recommendations as to process details and type of equipment best suited for your particular requirements.

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*Section of 90" concrete pipe is swung into place easily and quickly*

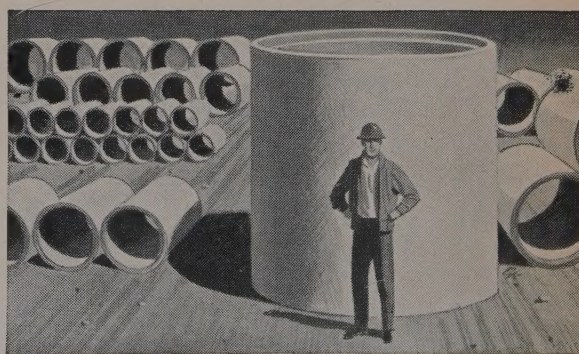
*For Chicago's newest sewers...*

## **concrete pipe provides maximum strength, greater capacity!**

To alleviate street and basement flooding, Chicago is carrying out a multi-million dollar enlargement of its combined sewer system.

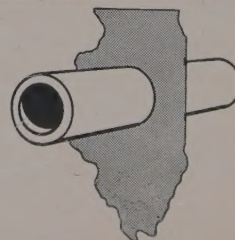
On the new Roscoe Street section, 12,500 feet of concrete pipe, 36" through 90" I.D., was used. Placed deep underground—an average of 27 feet for the 90" size—the pipe carries backfill and traffic load without further support. (A real time and economy advantage, too!) And resistance of the pipe to the overburden will increase because concrete gains strength year by year.

And maximum hydraulic capacity is provided by the smooth inner surface of concrete pipe. It resists abrasive wear. Concrete sewers, too, ensure minimum infiltration and leakage. Match all this with moderate first cost and you see why concrete pipe has a long record of solving difficult sewer problems for hundreds of municipalities.



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**Bottom Row**—left to right: Mr. Andrew Neureuther—Chief Engineer for the A. E. Staley Co. of Decatur; Professor C. D. Greffe—Professor of Mechanical Engineering, U. of I.; Professor W. W. Hay—Professor of Civil Engineering, U. of I.; Professor E. E. Bauer—Professor of Civil Engineering, U. of I.

**Middle Row**—left to right: Tom Kennedy—Treasurer—ASCE, student; George Rogan—Chairman—membership committee—ASCE, student; Scott VanDyke—Chairman—program committee—ASCE, student; Marshall Thompson—Chairman—refresher course—ASCE, student.

**Top Row**—left to right: Doug Schwantes—Chairman—arrangements Committee—ASCE, student; George Hansen—Secretary—ASCE, student; Bob Jones—Senior Engineering Council—ASCE, student; Greg Lockhart—Chairman—publicity committee—ASCE, student.

## WHEN IS AN ENGINEER AN ENGINEER?

A panel discussion on the importance of registration to the young engineer was presented to the student chapter of ASCE at the University of Illinois, February 16. Those who took part on the panel were Professor C. Dale Greffe, University of Illinois, and board member of ISPE, A. W. Neureuther, member of the Illinois Professional Engineers Examining Committee and past president of ISPE, and L. C. Goddard, Executive Director of ISPE.

The panel was unanimous that Registration should be a minimum requirement for a person to be classified as an Engineer. Mr. Neureuther stated that more and more industry was using registration as a minimum standard for promotion of engineering personnel.

He answered several questions relative to the functioning of the examining committee and types of questions that are included in the examination. He stressed importance of young engineers taking courses in economics while in school, or an intensive review of economic subjects prior to the taking of the examination. Professor Greffe warned students that if engineers do not accept responsibilities as a professional group the unions will move in to fill the vacuum created by the complacency of the engineers themselves. Greffe stated that union philosophy was not compatible with the professional concept. A professional person must be free to think and act in a creative manner and not

be hampered by a philosophy of restrictions and limitations imposed by union leaders.

Goddard compared Engineers to Doctors and Lawyers and stated that engineers meet the requirements for Professional definition. However, the engineers have not fully recognized themselves as professional people. They desire the prestige and status of being called "professional," but have not universally accepted the responsibilities and duties that are required of other Professions. For example, a lawyer must meet educational requirements of 5 to 6 years of college. After receiving a degree he must satisfy the minimum requirements of law by taking an examination and being formally admitted to the bar before he can practice or occupy a position as attorney or counsel.

Government Civil Service Standards will now classify a lawyer as such until admission to a State Bar. Prior to such admission he must accept a classification as a legal clerk in a much lower pay scale. The Engineer is not required to meet such standards, and as a result the term engineer is degraded by being commonly used by "Operating Engineer," heavy equipment operators, "Office Engineers" or by anyone who wishes to attach "Engineer" to his name.

An Engineer will only be an Engineer with real meaning when:

1. He becomes registered himself.
2. He demands that all who use Engineering titles be registered.
3. He insists that the laws and ethics pertaining to the Profession be strictly enforced.
4. Engineer curriculums expand to include courses that will develop "The Professional Attitude" and equal other Professional Schools in length of time required to earn a Bachelor's Degree.



Pictured above is part of the Chicago Chapter Membership Committee who was instrumental in forming North Chicago Sub Chapter. Left to right: Jim Samartano, Dick Kessler, Sidney Bates. Standing: C. E. Zanzie, Joe Marion.



**THE GREAT LAKES -****ST. LAWRENCE SEAWAY**

By CHARLES F. MACNISH, P.E., F. ASCE, M.N.S.P.E.,  
 Assistant Chief, Engineering Division  
 North Central Division, Corps of Engineers,  
 Chicago, Illinois

The area in which we live has been referred to as the Colossus of Chicago, The Miracle of the Midwest. Many factors have contributed to the economic, industrial and cultural might of Greater Chicago. One such factor, however, is common in the cases of the vast majority of Great American cities—that is—Chicago, together with its environs, is located upon and is served by water. Located both upon the southern shores of Lake Michigan of the Great Lakes-St. Lawrence System, and upon the Illinois Waterway of the Mississippi River System, Chicago is doubly blessed.

It is quite natural that systems of lakes and rivers are of special interest to those of us in the engineering profession. When the early explorers and settlers moved into the central plains, they followed the lakes and the rivers, and they laid on the lake shores and river banks the village keystones which have grown into modern centers of industry and transportation.

I was asked to write specifically on the Great Lakes-St. Lawrence Seaway Navigation Systems. I am pleased to do this. I have chosen, in my opening remarks, to point up certain aspects of the Chicago Area in which we reside and earn our livings. As individuals we are fortunate that this is an area which has developed so prodigiously, which has been a prime benefactor of the Great Lakes for many years, and which so surely will be a major benefactor of the St. Lawrence Seaway.

The Great Lakes system consisting of five great bodies of fresh water, extending half way across the North American Continent, are joined with each other by relatively short connecting channels. In its primitive state, the watershed of these lakes was covered by virgin forest. Enormous deposits of iron ore were found in the present states of Michigan, Wisconsin and Minnesota. Throughout the watershed were inexhaustible deposits of limestone rock. To the south and east lay the coal fields of the Upper Ohio River Valley, while to the northwest, west and south were situated the agricultural areas of Canada and Upper Mississippi Basin. The Great Lakes Basin therefore contained, or was adjacent to, the natural resources necessary for industrial and agricultural development, and the lakes themselves provided a natural transportation route which was ideal for the movement of bulk commodities. The development of channels and harbors on the lakes has been a vital factor in exploitation of these natural resources and in the development of the industrial region of the North Central States.

Navigation improvements on the Great Lakes and their Connecting Channels have paralleled the growth

and development of the Great Lakes Region. Most of the commerce on the Great Lakes consists of bulk raw materials such as iron ore, stone, coal, grain and petroleum products. Total United States traffic on the Great Lakes averaged about 219,000,000 net tons annually for the five-year period 1954 to 1958. The maximum during this five-year period was in 1957 when the total was about 244,000,000 net tons. During the five-year period the annual average traffic in iron ore was about 82,000,000 tons; in coal about 58,500,000 tons; in stone about 27,000,000 tons and in grain about 7,500,000 tons. During 1957, 108,000,000 tons passed through the St. Marys River and 130,000,000 tons through the Detroit River. These amounts are not additive since a large portion of the traffic passes through both the St. Marys and Detroit Rivers between Lake Superior and Lake Erie.

The Great Lakes and their tributaries above Ogdensburg, New York, on the St. Lawrence River, drain an area of approximately 298,000 square miles and constitute the major portion of the St. Lawrence River Basin. The length of steamer track from Duluth at the west end of Lake Superior to Ogdensburg, New York, in the St. Lawrence River is 1,216 miles.

The Great Lakes, together with their deep-draft Connecting Channels, constitute the greatest deep-draft inland waterway system in the world. Extensive improvements to channels and harbors have been required to develop this system to accommodate Great Lakes traffic. Up to this time no improvements by the Federal Government have been required on the Great Lakes to accommodate overseas traffic since existing Connecting Channels and harbors were more than adequate for the small, shallow-draft ocean vessels which could pass through the 14-foot St. Lawrence River canal system.

Although the lakes are deep the connecting rivers commonly called the Connecting Channels had shallow reaches in their original state. Over the years it was necessary to dredge the river channels to provide adequate depths to accommodate deep-draft lake vessels. In addition, the Falls in the St. Marys River at Sault Ste. Marie, were impassable and locks were required to permit vessels to pass between Lakes Superior and Huron.

This brings us to the St. Lawrence Seaway. During the years 1951 to 1954 the Governments of Canada and the United States authorized the construction of navigation structures and channels to provide for depths of 27 feet between Lake Erie and Montreal. From Montreal to the sea, Canada had already provided a ship channel with a controlling depth of 35 feet. From Lake Ontario to Lake Erie the Canadian Welland Canal had provided a ship channel with a controlling depth of 25 feet which has now been deepened to 27 feet. For many years there existed a navigation system between Montreal and Lake Ontario which provided a



channel depth of 14 feet. This system consisted of a series of navigation locks and canals which bypassed the numerous rapids of the St. Lawrence River. The locks of this previous St. Lawrence Navigation System were 44 feet in width by 250 feet in length with depths of 14 feet over the lock sills.

The modern St. Lawrence Seaway was formally opened to deep-draft ocean navigation in July of 1959. It is now fully operational and essentially complete except for widening certain reaches of the channel by additional dredging. It provides for a minimum channel depth of 27 feet. The fall of about 225 feet between Lake Ontario and Montreal is accommodated by 7 deep-draft navigation locks in the St. Lawrence River with dimensions of 860 feet long center to center of pintles by 80 feet wide with 30-foot depths over the lock sills. Five of the navigation locks lie in Canada and were built by the Canadians. Two locks on the American side of the International Rapids section of the St. Lawrence were built by the United States.

Harbor development on the Great Lakes has paralleled the improvement of the Connecting Channels so as to provide adequate depths and maneuver areas for vessels at ports and terminals. Since practically all of the deepest draft iron ore vessels pass through the Connecting Channels, the depths provided in those channels have generally been a determining factor in the maximum depths required in the major deep-draft harbors.

The need for improvements at harbors on the Great Lakes to accommodate the large, deep-draft vessels which will transit the deeper channels now being provided has been recognized. Resolutions adopted on 18 May 1956 and 27 June 1956 by the Public Works Committees of the Senate and the House of Representatives, respectively, requested the Corps of Engineers to determine the advisability of further improvements of harbors on the Great Lakes in the interest of present and prospective deep-draft commerce. In undertaking this study the Committees requested that due regard be given to the scheduled time of completion of the St. Lawrence Seaway and of the deepening of the Connecting Channels between the Great Lakes.

Studies by the Corps of Engineers are well advanced to determine deepening and related improvements which are required at individual harbors. Each harbor must be considered individually as well as collectively with other harbors in the area. The improvements proposed at any individual locality must be justified on their respective merits.

Our studies to determine improvements which can be justified at Great Lakes harbors involve three major elements—namely, traffic analysis, engineering studies and an economic analysis.

The plan to develop an estimate of the potential Great Lakes overseas traffic as a result of the 27-foot

St. Lawrence Seaway involved several basic studies, each one of which has a definite relationship and interdependence upon the other. The program of the traffic analysis study includes several comprehensive studies dealing with the following major phases:

- A. Basic economic background factors of the area and its growth prospects.
- B. Origin and destination of imports and exports.
- C. Land freight rates and costs; water transport costs; and differentials.
- D. Prospective traffic patterns of the Great Lakes Area.
- E. Delineation of Great Lakes tributary area.
- F. Estimate of potential Great Lakes traffic.

The basic economic background project comprises a comprehensive examination of manufacturing, mining, farming, transportation, merchandising, public utilities and many other facets of the economy of the United States in general and the Great Lakes tributary area in particular. This also involves projections of future growth and development.

A basic area of information required to make an informed estimate of future overseas foreign trade traffic is development of data to show definitely at what points exports originate within the United States (and particularly in the Great Lakes tributary area) and for what points imports are destined. To obtain the necessary data an agreement was entered into with the Bureau of the Census. This project consisted of a sampling of United States exports and imports in 1956 to determine for an extensive array of export commodities, the exact interior points from which they were

(Continued on Page 18)

### MR. CHARLES F. MacNISH, P.E.

Mr. MacNish is Assistant Chief of the Engineering Division of the Corps of Engineers, North Central Division in Chicago. The North Central Division has District offices in Chicago, Detroit, Buffalo, St. Paul, and Rock Island. Mr. MacNish has been with the Corps of Engineers for the last thirty years and has had overall responsibility for such projects as: the St. Lawrence Seaway; the Calumet-Sag Channel; Navigation Locks and Dams on the Mississippi River; Flood Control Reservoirs; Navigation and Hydro-electric Power Projects for the Upper Mississippi River Valley, and a variety of military projects including several Air Force SAC bases and many other facilities.

Mr. MacNish also has had a distinguished military career which included service as a Captain in the U.S. Navy in World War II and he has recently retired as a Rear Admiral in the U.S. Naval Reserve. He is a Registered Engineer in Illinois and Missouri and is a member of NSPE, ASCE, Tau Beta Pi, and is Chairman of the ASCE Technical Committee on Navigation and Flood Control. He is widely known as an authority on flood control and navigation.



## THE ILLINOIS HIGHWAY PROGRAM

By R. R. BARTELSMEYER

Chief Highway Engineer—Illinois Division of Highways  
General Session, 46th Annual Highway Engineering  
Conference, Urbana, Illinois, February 24, 1960.

It is indeed a pleasure to appear before you at this time to talk to you about the "ILLINOIS HIGHWAY PROGRAM."

In reviewing my remarks made to this Conference in 1958 and 1959, I find a great difference in the existing conditions concerning the highway program each year and this year they are entirely different again.

In 1958 we were still in the process of greatly accelerating all phases of preliminary planning, design and right of way acquisition, in an attempt to obligate the substantial Funds made available by the 1956 Federal Highway Act. I was also stressing the problems encountered in handling such a large program. There was, however, no doubt in our minds that we would attain the necessary plateau of engineering organization and ability to adequately manage the yearly authorizations anticipated in the provisions of the 1956 Act. In addition to the regular program, we were also allotted an additional \$27 million worth of construction work provided by the "D" Fund legislation passed in the middle of 1958. This work was also placed under contract within the time limit of approximately six months.

Last year I told you we were on schedule with our highway program as it related to use and encumbrance of available Federal-aid Funds, but that there were some very major problems that would have to be received by Congress to keep the program going at the level and within the guaranteed reimbursement and other conditions of the past years. As most of you probably remember, the problem of additional funds to bolster the Federal Highway Trust Fund was argued and discussed in the committees of Congress from early in 1959 when President Eisenhower recommended a 1½¢ per gallon temporary motor fuel tax increase until the adjournment in September. The tax was finally passed as a 1¢ increase, which provided the Funds to keep the program going at, however, a reduced pace.

The effect of all this on Illinois was principally in the 1961 fiscal year apportionment of Interstate Funds, which was reduced from a total of \$127.5 million per year to \$91 million.

The A. B. C. apportionment (Primary, Secondary and Urban) was reduced from \$39.5 million to \$38 million.

During the year 1960 our highway lettings will be subject to the reimbursable obligation schedule which was established by the U.S. Department of Commerce and became effective November 1, 1959. This schedule,

which pertains only to Federal-aid Funds, was adopted to provide an orderly scheduling of obligations in order to insure that anticipated revenues would be available to meet reimbursement requirements during the current next fiscal years. The objective, in cooperation with the States, was to establish the amounts which each State could expect to receive in Federal reimbursement from the Trust Fund.

The effect of this schedule in Illinois may be briefly summarized as follows:

The total of Federal Funds allocated to Illinois for the fiscal year 1960 (July 1, 1959 to June 30, 1960) amounted to approximately \$129,000,000. This amount includes all funds such as Interstate, Primary, Urban and Secondary. As of November 1, 1959, the date that the schedule became effective, we had obligated approximately \$58,000,000 of the funds allocated leaving a balance of approximately \$71,000,000 available for obligation prior to July 1, 1960. This amount was then scheduled by the Bureau of Public Roads permitting us to obligate approximately \$10,000,000 between November 1, 1959, and December 31, 1959, and about \$30,000,000 in each of the first two quarters of 1960.

Because of this reimbursable obligation schedule, we felt it necessary to hold the amount of Federal-aid Funds for work included in the January 15, 1960, letting to approximately \$10,000,000 and in the February 19 letting to approximately \$12,000,000. These Federal Funds, supplemented by State Funds, permitted receiving bids for approximately \$30,000,000 worth of work in the two lettings. The allocation of Federal Funds by quarters presents a new problem and makes it imperative that only work on which immediate construction can be started be included in lettings, thus preventing Federal Funds from being tied up in work which would not be undertaken until one or more quarters later. We are using a procedure whereby the maximum amount of construction can be obtained from each contract awarded in the shortest possible time. Contracts for construction projects will be scheduled in such a way and will include such work items so that the contractor will be able to start construction operations immediately after award and carry the work through to completion.

As most of you know, there are 1,608 miles of the Interstate System in Illinois. As of January 1, 1960, plans were being developed on 518 miles, rights-of-way were being acquired on 149 miles, construction was under way on 140 miles and 234 miles were completed to full Interstate standards. Of the 234 miles completed to Interstate standards, approximately 152 miles are operating toll roads located on the Interstate System. With the construction that began at an accelerated



rate in 1958 and continued through 1959, together with what we expect to accomplish this year, we should have an appreciable additional mileage of Interstate roads available for traffic by the end of the 1960 construction season.

There are a few other things that I would like to discuss.

You have all recently seen a considerable amount of publicity and information about the problem of vertical clearances to be provided on the Interstate System. Last year in October we believed that 17 feet would be established. Just recently the Defense Department and the Bureau of Public Roads have agreed on 16 feet. Since we have been providing 15 foot clearances on the Illinois Interstate System, it now becomes necessary to revise our planning to accommodate 16 and 3 inches which will be necessary, in providing for future resurfacing.

A Special Sub-Committee of the House Public Works Committee has been established to investigate the highway program and hearings are being held in Washington now on their first investigative effort, which is the vertical clearance problem.

This Special Sub-Committee is staffed by capable and experienced investigators who were formerly on the Senate Labor Investigating Sub-Committee. They will check into any area of the vast Federal-aid Highway Program where evidence exists or accusations are made concerning alleged corruption or mismanagement of the program.

It is, therefore, important that each of us who is charged with responsibilities in connection with administering any part of the highway program, make sure that all expenditures for constructing, maintaining and operating the various highway systems, are made in accordance with sound engineering and fiscal principles, and with the plainly declared purpose of providing the maximum public benefit and service for the least amount of the taxpayer's money.

Since the highway program has grown to be the large undertaking that it now is, many people will be looking into our operations with the idea of finding things to be critical about. It is therefore, imperative that we not be complacent and believe that we have had a perfect performance in the past and do not need improvement in the future. The very fact that accusation of both poor or misguided management are being thrown at us should make us all more keen and alert in scrutinizing our entire performance, so that any defects that exist may be immediately corrected.

Another very important item for which we must assume great responsibility in the next couple of months is the preparation of the new cost study for the uncompleted part of the Interstate System. The continuation of the Interstate Program, as we know it at this

time, may very well depend on the accuracy and completeness of this study. The last study was made in 1957 and submitted to Congress in January, 1958.

The increase in cost of the '58 report, over the cost used in developing the 1956 Highway Act, have furnished the main fuel for those who are opposed to the overall highway program. The statement has been made many times during the last two years that this large increase in cost definitely indicates the inadequacy of the States and the Bureau of Public Roads to properly administer the program.

The increase in cost from \$25 billion to \$36 billion caused Congress to request the General Accounting Office to review the estimates prepared by eleven States throughout the country. Illinois was one of the States selected for that study. I am not going to go into any details of the General Accounting Office Report, but there was a considerable amount of criticism levelled at the States for errors in computation, non-uniformity in application of standards and in documenting sufficient justification for many of the construction items included. It is very important that we exercise great care in developing the new cost report, so that it can be defended without apology, against all the criticism that may be expected. The remarks concerning the interstate cost study are applicable only to State Highway people and I appreciate the indulgence of the others here in listening to these words of advice.

## TENTATIVE LADIES' PROGRAM

**Seventy-Fifth Annual I.S.P.E. Convention**  
**St. Nicholas Hotel, Springfield, Illinois**  
**Wednesday, May 4**

7:00-10:00 P.M.—Registration in Lobby  
 Hostesses in Hospitality Room 433  
**Thursday, May 5**

8:30 A.M.—Coffee Hour—Hospitality Room

1:00 P.M.—Luncheon at the Lake Shore Country Club. Program: Norman Bullard will entertain with Folk Songs

3:00 P.M.—Bus Tour of Lincoln Memorial Garden and Springfield residential area

6:00 P.M.—Social Hour with Men

7:00 P.M.—Buffet Dinner in the St. Nicholas Hotel Ballroom  
**Friday, May 6**

9:30 A.M.—Early Bird Chatter

10:30 A.M.—Brunch at the Hotel Governor  
 Program: The Hat Lady from Dwight

2:00 P.M.—Tea at the Governor's Mansion

6:00 P.M.—Social Hour with Men

7:00 P.M.—Banquet and Dance—St. Nicholas Hotel Ballroom



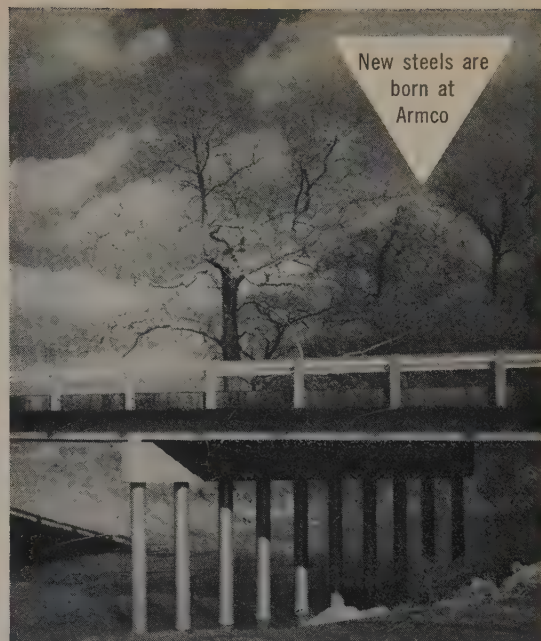


I.S.P.E. Highway Functional Section—Front, left to right: Gil Henning, Floyd Birt, Oscar Frost (Mr. Frost died unexpectedly Feb. 15, shortly after this picture was made). Standing, left to right: D. H. Murphy, Al Osterling and Norman Gundrum.

Another important item that I want to mention briefly is the great necessity for coordinating highway improvements in the urban areas with the overall planning in those areas. Since more and more of our population will be concentrated in urban areas, as evidenced by estimates that by 1975 two-thirds of the nation's population will live in 200 urban areas, it is significantly important that greater emphasis must be placed on properly developing transportation facilities through the urban areas, which will satisfy the needs for many years to come. The American Association of State Highway Officials is presently planning to hold seminars for highway planners and engineers to gain a better understanding of city and urban planning techniques. It is hoped that these meetings will be the start of many other similar endeavors along these lines, to include counties, cities and other governmental highway planning groups.

It was my privilege to serve as the President of the American Association of State Highway Officials last year. As part of my duties in connection with this office I was honored to appear before Committees of Congress representing the States on matters of Federal-aid highway legislation. Actually I also represented counties and municipalities who are beneficiaries of Federal-aid Funds that accrue to the States. In addition to my appearance before the Public Works Committees of the Congress to discuss existing and future Federal-aid for highways, I was also privileged to appear before the House Ways and Means Committee when they were considering the financing of the program proposed by the Public Works Committee.

Considering the fine treatment received while appearing before these Committees, I am thoroughly convinced that the State Highway Departments, including their County and Municipal partners, enjoy the complete respect of the Members of Congress who represent us. It is my firm conviction that the cause of good highways and adequate transportation facilities can best be served if we discuss these matters regularly and sincerely with our legislative representatives at both the State and Federal level of government. I hope everyone in this audience realizes the importance of this statement.



## Armco Piling Helps Uncork Traffic Bottleneck

This modern bridge, supported by Armco Pipe Piles, replaced a narrow truss-bridge near Franklin, Ohio. The old structure was a dangerous traffic hazard because crossing it involved a sharp S-turn. The new bridge is supported by two bents, each composed of 10 Armco Pipe Piles.

Armco Pipe Piles can be driven with any standard pile driving equipment. A commercially-accurate circle, together with the spiral reinforcement of the weld bead, allows Armco Piles to be driven straight and deep without collapsing. They can be inspected during and after driving by shining a light inside.

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## ST. CLAIR CHAPTER NEWS

The St. Clair Chapter of the Illinois Society of Professional Engineers observed National Engineer's week with a banquet on Thursday, February 25th at The Knights of Columbus Club, 1447 State Street, East St. Louis, Illinois. Cocktails were served to the members, wives and other guests preceding a steak dinner.

Principal speaker was Mr. A. Carl Weber, Director of Research Engineering, Laclede Steel Company. Mr. Weber presented his material in a very interesting and enjoyable manner and in a more serious vein brought a message of interest to all Engineers.

An important highlight of the meeting was presentation of a plaque to John Edwin Weinell for "Engineer of the Year" award for outstanding work for and in the field of engineering in this area.

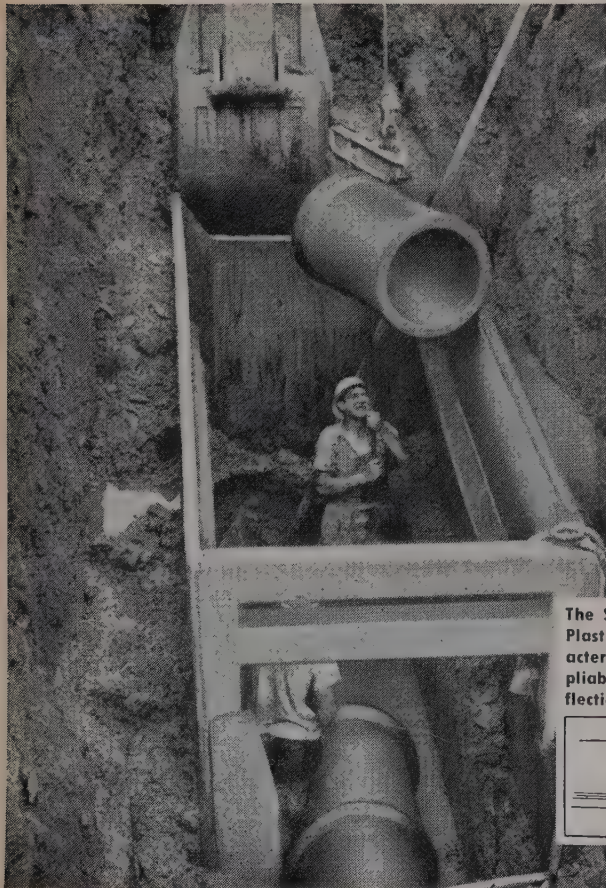
"Dick" Weinell as he is commonly called was born in Columbia, Illinois on March 8, 1887. He obtained his education in Columbia grade school, the manual training high school and college at Washington University.

Mr. Weinell had varied employment from 1908 to 1923, including the Corps of Engineers, Engineering Departments of the City of East St. Louis, East Side Park District and East Side Levee and Sanitary District. In 1923 he entered private practice, specializing in surveying and consulting engineering. His work included several subdivisions, Cities and Villages and Water Districts. "Dick" has been in semi-retirement since January 1957.

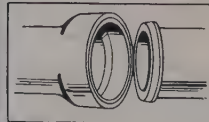
He has been a member of the Land Surveyors Examining Committee for the Illinois Department of Registration and Education since April 26, 1946, and has been Chairman of the Board since November, 1957. He is both a registered land surveyor and a professional engineer.

Mr. Weinell has been a member of the Illinois Society of Professional Engineers since 1929 and became a national member in 1946. He served as Chapter President in 1937 and 1938 and as Chapter Representative in 1942, 1943, 1944, 1945, and 1946. He is also a member of the Engineers Club of St. Louis and the American Military Engineers.

## No Slowdown-No Costly Delays with Streator's New Amvit Joint



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This crew in Joliet, Illinois—despite adverse conditions—had no trouble in completing their job, on time, and knowing that the Amvit Joint would maintain a perfect seal through normal backfill and settling.

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**"WISHBONE OR BACKBONE"—**

(Continued from Page 3)

**OPERATIONAL SEQUENCES**

	NSPE	ISPE	CHAPTER
	State President's Conference		Annual Meeting
		Annual Meeting	P. E. Exams
	Annual Meeting	Chapter Officer's Conference	Chapter Committee Conference
	Committee Organization	Board Meeting	
	Committee List Published	Directory Published	
		Board Meeting	
	Board Meeting		Recognition Dinners
	Nominations Young Engineers	Board Meeting Young Engineers	P. E. Exams Young Engineers
		Nominations Dues Notices	
		Board Meeting	Nominations
	Board Meeting Election-Engineers Week	Election Engineers Week	Engineers Week
		Board Meeting	Elections

**Fig. 3****HOW DO WE GET ACTION?**

Your Chapter is an autonomous unit, but the principle of autonomy should be carefully examined and understood. Autonomy does not provide an excuse for inaction or disinterest on the part of ISPE—or an excuse for no action on the part of the Chapter. Autonomy is the right of self-government free from outside control but within the framework of the overall organization. Chapters, for example, are not autonomous in matters of establishing professional policy. They are, however, free to formulate policy ideas and present them through the established organization and action sequence. Chapters, therefore, enjoy administrative autonomy.

As a Chapter Officer, you have been elected to the office which you hold because of the confidence your Chapter members have in you. The office you hold is an honor—but not honorary. The honor of the office very soon extracts a penalty in the form of real work. Work to guide and direct Chapter programs in quest of your professional objectives. This is no small task and the men who undertake it deserve respect and support.

In developing activities, Chapter Officers should exercise caution in order not to miss the point behind all activity. That point is this . . . there is a need . . . a great demand for professional information and orientation. This vast area of professional development for individual members needs to be continuously cultivated at the Chapter level. In doing this, Chapter Officers are expected to assume the initiative—take the lead. This calls for leadership. The word "leadership" has a very ancient meaning and comes from an

Anglo-Saxon word that signifies "carry the load." The leader carries the load. That is why you were chosen for office—to carry the load for your Chapter. We get action, or the lack of it, through the leadership of Chapter Officers.

**CHAPTER ACTIVITIES**

In carrying the load for the Chapter and developing a strong activity program, officers will need to use all of the resources available for Chapter work. They are as follows:

1. NSPE Services and Materials
2. ISPE Staff and Services.
3. Budgeted Funds.
4. Members Volunteer Contributions.

The basic responsibilities of Chapter Officers in the discharge of their duties can be listed as follows. With regards to their Chapter's activities, they are responsible for:

1. Planning—or deciding what is to be done.
2. Organizing—or setting up the structure to put the plan into effect.
3. Assembling the Resources—or exerting the effort to execute the plan.
4. Directing the Effort—or giving guidance to the work of others.
5. Communication—or the working together in a harmonious integrated relationship.

**THE GOAL**

The goal for every Chapter is to be a progressive organization. The marks of a progressive organization are that it: be well organized; have its objectives well defined and cast in terms of time, resources and purpose; have a plan to achieve its objectives; have a proper financial structure; and have excellent communication.

To want a progressive Chapter and to merely "wish for one" will not make it so. If we come to rely on wishbone for progress, then we are apt to slip into the area of mediocrity. We have the inherent capacity for growth and progress through a large membership potential, a resource of untapped individual ideas and a noble discontent with our present professional stature. You have inherited as part of your professional estate a framework for activity. The opportunity and the obligation to upgrade professional attitudes is yours. Ordinary results will be achieved by ordinary effort and ordinary methods.

We cannot wish our way to success in this area.

We need wishbone . . . but we need backbone in our efforts, too. Your ISPE will do the job you want it to, provided we have someone on the business end of its activities supplying the needed backbone.



**N.S.P.E. WINTER MEETING**

February 18-20, 1960

Wichita, Kansas

C. E. MISSMAN

All dinner and luncheon meetings were held jointly with the Kansas Engineering Society attending their 52nd annual meeting. President Harold A. Mosher gave the opening dinner address the evening of February 18th. His subject was "What The 60's Will Bring To Engineering And Science." President Mosher envisions a rapidly expanding society with a membership of at least 150,000 members in 1970 with challenges, both technical and professional, beyond our conception.

Major General A. M. Minton, Director of Civil Engineering, United State Air Force, addressed the noon luncheon on February 19th. General Minton is a Civil Engineering graduate of the University of Illinois, a Registered Professional Engineer with numerous assignments in Illinois, including service at Chanute Air Force Base. His subject was "The Professional Engineer Program in the United States Air Force."

The February 19th dinner meeting was addressed by Joseph Tippetts, Director of the Bureau of Facilities, Federal Aviation Agency. He stressed the role of engineering in aviation, particularly in designing safe aircraft and solving the problems of providing safe travel space for each craft. He estimated that 20 percent of the FAA employees were engaged in engineering activities.

1. President Mosher requested Directors from various States to express their opinions of whether or not the "grass roots" members understood the program and goals of NSPE. The general opinion was that the average member was not informed, despite the great amount of well written publications available on a State and National level. It was agreed that communications was the greatest problem of the Society and NSPE can be aided by National Directors and State officers explaining and discussing the program with as many Chapters as possible.

2. The Scholarship Committee has enacted a program for soliciting scholarships in addition to the Armeo-NSPE plan. This program is to go into effect at once, with a major effort to be made from March 1 to June 1. Each State should immediately appoint an Engineering Scholarship Extension Committee to execute the plan. A pamphlet entitled "An Engineering Scholarship Program Sponsored by Industrial and Engineering Firms" outlines a program for firms to sponsor one or more scholarships for high school graduates who are carefully selected and expect to study engineering. The administration of this pro-

gram for NSPE will be a non-profit corporation named the "NSPE Engineering Scholarship Board."

3. The Board adopted that there shall be three grades of engineering technicians:

- A. Engineering Technician in Training.
- B. Engineering Technician.
- C. Certified Engineering Technologist.

The exact method of how these technicians are to be certified is not yet resolved. There was considerable discussion on how much NSPE should be concerned with attempts at unionization of engineering technicians.

4. The Board of Ethical Review submitted three cases for consideration and approval by the Board. They concerned:

- A. Advertising of Engineering Services.
- B. Termination of Engineer's Services and Retention of Different Engineer for Same Work.
- C. Preferential Treatment of Building Materials. Free Engineering. Conflict of Interest.

The Board also adopted: That NSPE urge its members to contract for listing in classified telephone directories only under the general heading: "Engineers—Professional" or "Engineers—Registered" and such descriptive sub-headings as are adopted by their State Board of engineering examiners to describe their specific engineering branch or branches of competency.

**N.S.P.E. BOARD MEETING—**

(Continued from Page 6)

Following a lengthy discussion, the Committee's Report was finally accepted and adopted by the Board. It was the consensus of opinion that the setting up of three grades of student chapters would give an opportunity to all pre-engineering students to enroll in a program of professional development. It was pointed out on the floor that there was a definite trend, due to the overcrowding of our larger universities, of students enrolling in Junior and Liberal Arts Colleges for at least the first two years, and completing their academic courses at an accredited engineering school. The establishment of three grades of student chapters permits an opportunity of professional development throughout the student's academic courses, regardless of type of school.

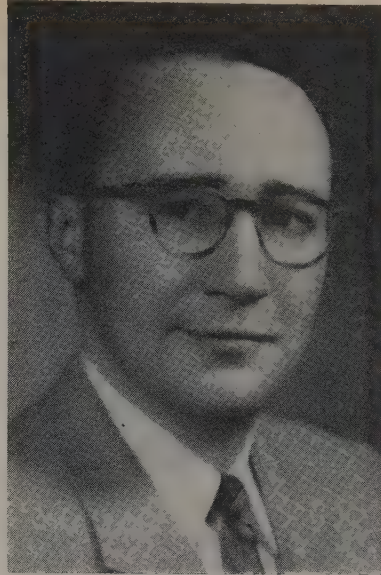
The problem of student chapters has been discussed pro and con for over ten years at the various Board Meetings of NSPE. It was somewhat with a feeling of relief, and also gratitude, to the Student Chapter Committee for having brought forward a constructive plan for solving this rather difficult problem.

The successful implementation of the plan will depend upon the individual State Societies.





C. S. Ward



Craig Cain



Arthur H. O'Connor

## IC.P.A. ELECTS OFFICERS

At their recent annual meeting in Springfield, the Illinois Concrete Pipe Association elected the following officers to serve during 1960: President: C. S. Ward, Vice President and General Manager of Nelsen Concrete Culvert Company, Mt. Vernon, Illinois; Vice President: Arthur H. O'Connor, Vice President of Material Service Corporation, Chicago, Illinois;

Secretary-Treasurer: Craig Cain, Vice President of Continental Concrete Pipe Company, Blue Island, Illinois.

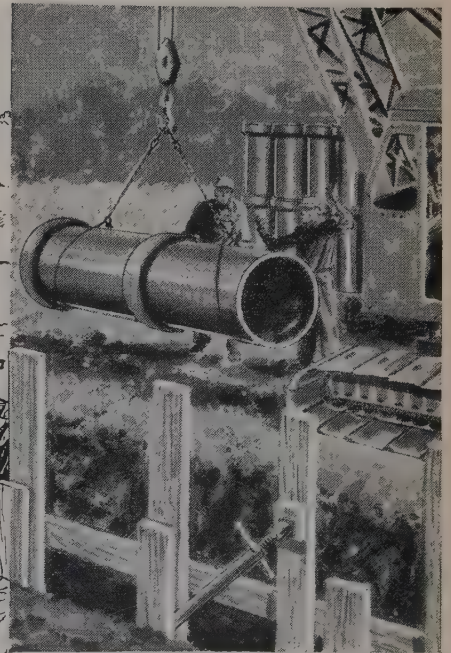
The ICPA, under the direction of the newly elected officers, will supply engineers in the Illinois area with material for the design and installation of concrete pipe. The association has 14 plants located strategically throughout the state.

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**GREAT LAKES-ST. LAWRENCE—**

(Continued from Page 10)

shipped, the routes taken to the port of exit from the United States and the mode of transportation employed. Similarly, for import commodities information is being developed to show the points at which the goods from foreign countries ultimately enter domestic trade.

The increase in foreign traffic to the Great Lakes through the St. Lawrence Seaway will result in deepening Great Lakes Harbors to 27 feet in many areas in order to accommodate such traffic. Some of this deepening will be in areas not required to be deepened for domestic Great Lakes traffic including bulk cargo traffic to and from Canadian ports.

Although water is one of man's oldest modes of transportation it has remained modern, through the combination of modern engineering and construction practices together with progressively improved practices of marine engineering. Barge and deep-draft navigation constitute an up-to-date method to transport bulk and general cargo economically and speedily. In 1957, the inland waterways of the United States carried 232 billion ton-miles of commerce. Of this, 51 per cent was carried by the Great Lakes system.

Now we are entering a new era in transportation facilities on the Great Lakes. The Great Lakes Connecting Channels between Lakes Superior, Michigan, Huron and Erie are being deepened from a controlling depth of 25 feet in downbound and 21 feet in upbound channels to a controlling depth of 27 feet in both downbound and upbound channels. The St. Lawrence Seaway with its 27-foot controlling depth from Montreal to Lake Erie replaces the old 14-foot St. Lawrence River canals and increases the depth of the Welland Canal from Lake Ontario to Lake Erie from 25 feet to 27 feet. Thus, we will have through channels throughout the Great Lakes-St. Lawrence System with minimum controlling depth of 27 feet.

Harbors on the Great Lakes will be deepened to 27 feet as may be required to handle all deep-draft commerce through the Connecting Channels and the St. Lawrence Seaway.

These improvements will provide an increase in vessel drafts of about 3 feet in the downbound connecting channels and a little over 7 feet in upbound channels. The 27-foot St. Lawrence Seaway provides an increase of about 12 or 13 feet in safe draft to the ocean and also provides large locks to permit the deep-draft ocean ships to enter the Great Lakes system.

Navigation improvements which have been completed, which are under construction, and which are being planned may be expected to continue to enhance the economic and industrial strength of the area tributary to the Great Lakes, together with its great metropolitan complexes such as Chicago. As the industrial and economic strength of the area may be expected to

be improved and to grow even stronger, so may the agricultural, economic and industrial might of our entire nation be expected to remain in a position of undisputed leadership.

### **CENTRAL ILLINOIS CHAPTER MEMBERS ACTIVE IN NATIONAL SECURITY SEMINAR IN DECATUR**

A National Security Seminar sponsored by the Decatur Association of Commerce will be presented by the Industrial College of the Armed Forces' Faculty from March 28 through April 8, 1960, at the Masonic Temple Auditorium in Decatur, Illinois.

The National Security Seminar seeks to foster a better understanding of the many inter-related problems associated with national security, a stronger appreciation of the inseparable nature of the civilian-military team, and a clear recognition of the responsibilities and capabilities of each half of the team.

The Seminar is a factual and analytical discussion of topics and problems which have a direct bearing on our survival as a nation.

Among subjects included in the course are:

1. The impact of technological progress on the national economy.
2. The financial and economic stabilization policies, controls, and programs associated with a mobilized economy.
3. Human resources; mineral and material resources; transportation and communication facilities; problems of production; broad aspects of world political, economic and power patterns; and the economic ability of nations and blocs of nations to wage war, "hot" or "cold", either with or against the United States.

Registration fee for civilians is \$15.00.

Lt. Comdr. John E. Housiaux, USNR, our ISPE Secretary, has been selected to serve on the Military Administrative Staff as Assistant Administrator for the U. S. Navy.

Gilbert D. Henning has accepted the assignment of Chairman, Social Activities Committee of the Civilian Seminar Committee of the Association of Commerce.

At this next Chapter meeting, detailed information will be available to interested persons. See Gilbert D. Henning or John Housiaux or contact the Decatur Association of Commerce office.



**Convention-Exposition - Springfield, May 4-8**



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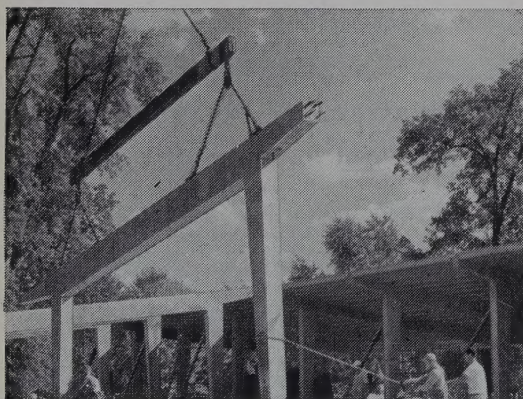
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